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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/693,009	10/24/2003	Scott Willis Jorgensen	GP-304048	9363

7590 12/01/2005
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General Motors Corporation Legal Staff
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EXAMINER

MARTIN, ANGELA J

ART UNIT PAPER NUMBER

1745

DATE MAILED: 12/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary

Application No.

10/693,009

Applicant(s)

JORGENSEN ET AL.

Examiner

Angela J. Martin

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 September 2005.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

This Office Action is responsive to the Amendment filed on September 16, 2005. The pending claims are 1-17. However, a new rejection is presented for the following reasons of record.

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1, 4, 5, 7, 10, 11, 13, 16 are rejected under 35 U.S.C. 102(e) as being anticipated by Kimbara et al., U.S. Pat. No. 6,605,377 B1.

Rejection of claims 1, 4, 5, 7, 10, 11, 13, 16 drawn to a fuel cell system.

Kimbara et al., teach a fuel cell system comprising a fuel cell stack generating output power and heat (abstract), the stack being responsive to coolant on a coolant input line and outputting heated coolant on a coolant output line (col. 1, lines 40-49); and a heat pump module responsive to the heated coolant (col. 1, lines 40-49), the module including a compression device (col. 4, lines 55-61), the device reducing temperature of compressed coolant (col. 7, lines 22-37), the heat pump module further including an expansion device responsive to the cooled and compressed coolant from the cooling device (col. 13, lines 22-28). It teaches the cooling device is a radiator (col.

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14, lines 16-20). It teaches the expansion device is an orifice separating a high pressure chamber from a low pressure chamber (Fig. 10, ref. 135).

Thus, the claims are anticipated.

3. Claims 1, 4-7, 10-13, 16, 17 are rejected under 35 U.S.C. 102(e) as being anticipated by Itoh et al., U.S. Pat. No. 6,584,796 B2.

Itoh et al., teach a fuel cell system comprising a fuel cell stack generating output power and heat (col. 3, lines 49-54), the stack being responsive to coolant on a coolant input line and outputting heated coolant on a coolant output line (col. 5, lines 54-64); and a heat pump module responsive to the heated coolant (col. 3, lines 49-50; col. 4, lines 42-54), the module including a compression device (col. 3, lines 55-56), the device reducing temperature of compressed coolant (col. 3, lines 56-58), the heat pump module further including an expansion device responsive to the cooled and compressed coolant from the cooling device (col. 8, lines 9-16), the expansion device decreasing the pressure and temperature of the coolant to further cool the coolant (col. 8, lines 9-16), where the cooled coolant is applied to the stack on the coolant input line (col. 8, lines 61-67). It teaches the coolant is hydrogen (col. 2, lines 20-32). It teaches the expansion device is an orifice separating a high pressure chamber from a low pressure chamber (col. 8, lines 9-16). It teaches the fuel cell system provides power to a vehicle (col. 3, lines 49-54).

Thus, the claims are anticipated.

4. Claims 1, 4, 5, 7, 10, 11, 13, 16 are rejected under 35 U.S.C. 102(e) as being anticipated by Gottmann et al., U.S. Pat. Application Pub. 2003/0157386 A1.

Gottmann et al., teach a fuel cell system comprising a fuel cell stack generating output power and heat (abstract), the stack being responsive to coolant on a coolant input line and outputting heated coolant on a coolant output line (sect. 0080); and a heat pump module responsive to the heated coolant (sect. 0004), the module including a compression device (sect. 0083), the device reducing temperature of compressed coolant (sect. 0122), the heat pump module further including an expansion device responsive to the cooled and compressed coolant from the cooling device (sect. 0181-0187), the expansion device decreasing the pressure and temperature of the coolant to further cool the coolant (sect. 0181-0187), where the cooled coolant is applied to the stack on the coolant input line (Figs. 3 and 4). It teaches the coolant is hydrogen (sect. 0080). It teaches the expansion device is an orifice separating a high pressure chamber from a low pressure chamber (sect. 0181-0187).

Thus, the claims are anticipated.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-3, 7-9, 13-15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kimbara et al., U.S. Pat. No. 6,605,377 B1, in view of Kimbara et al., U.S. Pat. No. 6, 802,875 B1.

Kimbara et al., '377, teach a fuel cell system as described above.

Kimbara et al., '875, teach a fuel cell system comprising a hydride bed (col. 28, lines 21-26).

Thus, it would have been obvious to one of ordinary skill in the art at the time the invention was made to insert the teachings of Kimbara et al., '875, into the teachings of Kimbara et al., '377, because '875 teaches that "for increasing the power generation efficiency of a fuel cell, it is preferred to employ a method of supplying pure hydrogen to the fuel cell. Known methods for supplying pure hydrogen include...using hydrogen absorbed in a metal alloy..." (col. 1, lines 27-33).

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Aflekt et al., U.S. Pat. Application Pub. 2005/0103487 A1, teach a vapor compression system for heating and cooling. Sridhar et al., U.S. Pat. Application Pub. 2005/0074650 A1, teach a power generator, which includes a fuel cell, and heat pump. Heyl, U.S. Pat. Application Pub. 2004/0221607, teach a combined cooling plant/heat pump circuit. Hesse, U.S. Pat. Application Pub. 2004/0219408, teach an air compression system for a fuel cell and a heat pump.

Response to Arguments

8. Applicant's arguments with respect to claims 1-17 have been considered but are moot in view of the new ground(s) of rejection.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Angela J. Martin whose telephone number is 571-272-1288. The examiner can normally be reached on Monday-Friday from 9:00 am to 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


AJM